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10/527,512	01/05/2006	Alexander Schluttig	S286 1030US	9958

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BARCENA, CARLOS	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/527,512	SCHLUTTIG ET AL.	
	Examiner	Art Unit	
	Carlos Barcena	4181	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *16-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *16-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *01 March 2006; 10 March 2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims 16 – 30 are pending for application 10/527512 (Attorney Docket No. H&U124) and presented for examination based on the merit.

Information Disclosure Statement

The information disclosure statement filed 10 March 2005 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because the international search report is not a document where the list of reference is not included in PTO-1449. 37 CFR 1.98(a)(1) requires the following: (1) a list of all patents, publications, applications, or other information submitted for consideration by the Office; (2) U.S. patents and U.S. patent application publications listed in a section separately from citations of other documents; (3) the application number of the application in which the information disclosure statement is being submitted on each page of the list; (4) a column that provides a blank space next to each document to be considered, for the examiner's initials; and (5) a heading that clearly indicates that the list is an information disclosure statement. The information disclosure statement has been placed in the application file, but the international search report and international preliminary report listed under NPL are improper references and therefore have not been considered.

The information disclosure statement filed 10 March 2005 and 01 March 2006 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because no English translation was provided for foreign patent documents. It has been placed in the application file, but the information referred to therein has not been considered as to the merits.

Applicant is advised that the date of any re-submission of any item of information

contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609.05(a).

Specification

1. The abstract of the disclosure is objected to because of the term "pK". The term "pH" is more commonly known to the general public and would more closely correlate to with independent claim 16. The word "phosphorous" should be preferably replaced with "phosphorus" and "neutralised" replaced with "neutralized" to conform to the English language. Correction is required. See MPEP § 608.01(b).

2. The disclosure is objected to because of the following informalities: (i) "find" is misspelled and be corrected to "fine" (page 1, line 10); (ii) "phosphorous" and "phosphorus" are used interchangeably through out specification and should corrected to only one spelling preferably " phosphorus"; (iii) "… a not insignificant…" is a double negative and should simply read "…significant..." (page 2, line 6); and (iv) the unit for normality should be capitalized from "n" to "N" (examples 1, 2, 3, 4, and 6). Applicant is also reminded that the claims should not be included with the written specification. Pages 9 - 11 should be deleted. Appropriate correction is required.

Claim Objections

3. Claim 16 is objected to because of the following informalities: the spelling of "phosphorous" should be consistent throughout and preferably replaced with "phosphorus" and

the word "effected" in section (iii) should be replaced with "affected". Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 16 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. It is not possible to have an alkaline solution with a pH of less than 7 as stated.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, specifically "a substantially aqueous solution of water-soluble, alkalinely reacting alkaline earth salts, ammonium hydroxide or alkalinely reacting ammonium salts or water-soluble organic amines with a pH between approximately 2.5 and 5.5". By definition, an alkaline solution cannot have a pH less than 7. On the pH scale, acidic solutions have a pH less than 7 and basic (or alkaline) solutions have a pH greater than 7.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 16-19, 22-24 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by McArthur *et al.* (US Patent 4,039,471).

Regarding applicant claim 16, McArthur discloses a method for the regeneration of a lead and/or phosphorus-poisoned emission (denox) catalyst comprising:

(i) contacting the catalyst with an aqueous alkaline solution (ammonium and/or acetate salt solution) (col. 10, lines 40-41) at a concentration of extremely dilute to saturated, preferably between about 2 and 10 M (col. 3, lines 55-59) which pH is between about 6 and 9.6 (col. 3, line 20-24); and

(ii) then thoroughly rinsing of the catalyst with dilute acetic acid(col.4, 11-12); and

(iii) in the preferred method of operation, the solvent is agitated by means of a recycle pump so that the denox catalyst is affected (col. 3, lines 44-49). No difference is made between moving the catalyst in the alkaline solution (treating the catalyst with low-frequency oscillations) or moving the alkaline solution around the catalyst since the effect is the same. This same result is that the solution moves around the catalyst removing impurities.

Regarding applicant claim 17, McArthur discloses the ammonium and/or acetate salt being selected from the class consisting of ammonium chloride, ammonium nitrate,

ammonium sulfate, ammonium acetate, ammonium citrate, ammonium carbonate, sodium acetate, potassium acetate, calcium acetate and magnesium acetate (claim 7b, col. 11, lines 33-38).

Regarding applicant claim 18 and 19, McArthur discloses rinsing the catalyst with acetic acid (an inorganic acid) (col. 4, lines 11-12).

Regarding applicant claim 22, McArthur discloses contacting the catalyst with the aqueous alkaline solution at a temperature of 20 °C (room temperature) to the boiling point of the salt solution (col. 10, line 42-43).

Regarding applicant claim 23 and 24, McArthur discloses the solvent is agitated by means of a recycle pump (col. 3, lines 44-49).

Regarding applicant claim 29, McArthur discloses a final water wash after the catalyst was contacted with acetic acid and subsequently oven dried at 110 °C for 3 h (col. 9, lines 13-15).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over McArthur *et al.* (US Patent 4,039,471) in view of Mross *et al.* (US 4,529,714).

Regarding applicant claim 20 and 21, McArthur discloses a method for the regeneration of a denitration catalyst, but does not specifically teach the use of adding surfactants to the alkaline treatment solution or acidic treatment solutions.

Mross teaches a process for regenerating catalyst used in ethylene oxide preparation and states the use of nonionic surfactants is recommended in regenerating catalysts (col.3, lines 15-21). Mross further states surfactants develop their desired effectiveness at very low concentrations (col. 3, lines 27-31) and, specifically, down to 0.1 wt %.

It would have been obvious to one of ordinary skill in the art at the time of invention to perform the process of McArthur including the use of surfactants to the alkaline treatment solution of step (i) or to the acidic treatment solution of step (ii) motivated by Mross. The

suggestion or motivation for doing so would have been because surfactants reduce the high surface tension of water. Surfactants are important washing agent components. The physical separation of the deposits (or contaminants) from the substrate is based on the nonspecific adsorption of surfactants at various boundary surfaces which are present in the process. Substances with a low solubility are solubilized in molecularly dispersed form by surfactant micelles. The adsorption of washing agent constituents induces changes in the interfacial chemical properties and, is consequently, a precondition for good detachment. In other words, surfactants in solution help to more completely clean the catalyst.

14. Claims 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over McArthur *et al.* (US Patent 4,039,471) in view of Budin *et al.* (US 6,484,733 B2).

Regarding applicant claim 25 and 26, McArthur discloses a method for the regeneration of a denitration catalyst, but does not specifically teach the use the step of treating the catalyst with an ultrasonic treatment so the regeneration of the denox catalyst is affected.

Budin discloses a process for regenerating used denox catalytic converters and teaches using acoustic irradiation in two different ranges (low-frequency and ultrasound), specifically, low-frequency oscillations less than 20 Hz and ultrasound greater than 20,000 Hz in constant or pulsed amplitude (col.4, lines 20-23).

It would have been obvious to one of ordinary skill in the art at the time of invention to perform the process of Mc Arthur including the use of an ultrasonication step motivated by Budin. The suggestion or motivation for doing so would have been to more completely clean the catalyst by ejecting the compounds (contaminants) from the pores of the catalyst (Budin, col. 4, lines 25-27).

Regarding applicant claim 27, although not expressly stated, it would be expected that applicant step (i) and (iii) would need to be carried out in basins as the process involves aqueous solutions. Furthermore, it would have been obvious to one of ordinary skill in the art at the time of invention to either have one basin with the option to ultrasonicate in that basin or two separate basins, one of which could be ultrasonicated. Therefore, it would make no difference if the process were carried out successively in separate basins or the same basin so long as steps (i) and (iii) are carried out.

Regarding applicant claim 28, McArthur does not specifically teach subjecting the catalyst to a mechanical pretreatment step to remove fine dust or pretreatment with water.

Budin does teach a mechanical abrasion of the outermost layer may be carried out prior to the regeneration of the catalyst in order to remove compounds which are coarsely adhering to the catalyst surface, such as for example dust, or the use of other mechanical means such as suction, blowing, sandblasting, brushing or the like (col.4, lines 35-40).

Nonetheless, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the method of McArthur to include a pretreatment step as taught by Budin. The suggestion or motivation for doing so would have been to removing any contaminant compounds adhered to the catalyst before entering the alkaline solution. This would (1) remove some of the loosely adhered contaminates and (2) extend the life of the alkaline solution.

15. Claims 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over McArthur *et al.* (US Patent 4,039,471) in view of Nojima et al. (US 6,395,665 B2).

McArthur teaches heating the catalyst with reducing components to reactivate the deactivated catalyst (col. 4, lines 22-54). McArthur does not reimpregnate the activator elements with water-soluble compounds after washing and drying the catalyst.

Nojima teaches a similar method of cleaning a denitration catalyst with aqueous alkaline solution to remove substances deposited thereon. Nojima discloses after washing and drying, the catalyst is impregnated with the active component prepared from aqueous solutions (col.5, lines 19-25).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the method of Mc Arthur and incorporate the step as taught by Nojima. Nojima describes that when the catalyst are subjected an alkali cleaning treatment, catalytically active components may be dissolved out from the catalyst, thus causing a reduction in denitration power due to a decrease in the active metal concentration in the catalyst (col. 5, line 11-23). The suggestion or motivation for doing so would have been to return the catalyst back to its original catalytic levels. As such, it would be advantageous to adjust the active metal component concentration in the catalyst to its level before regeneration.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Varner *et al.* (US 5,603,909). Varner discloses a method for multiple pollutant capture and removal of flue gas contaminants, such as arsenic, phosphorus and heavy metals. Rodewald et al. (US 4,992,614) describes the reactivation of partially deactivated catalysts employing ultrasonication energy in the range from about 5,000 to about 500,000 Hz, but more preferably from about 20,000 to 50,000Hz.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carlos Barcena whose telephone number is (571) 270-5780. The examiner can normally be reached on Monday through Thursday 8AM - 5PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on (571) 272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CB

/Vickie Kim/

Supervisory Patent Examiner, Art Unit 4181